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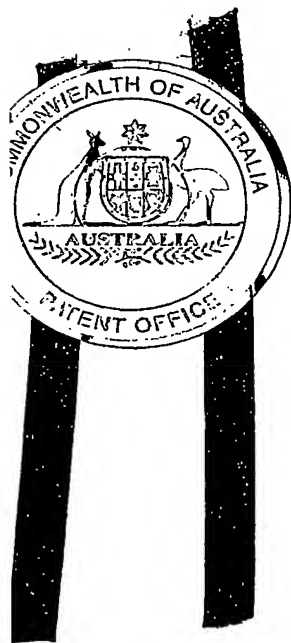
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PROVISIONAL SPECIFICATION

Applicant:

DING-GOES PTY LTD

Invention Title:

BAIT REINFORCING SYSTEM

The invention is described in the following statement:

BAIT REINFORCING SYSTEM

Field of the Invention

5 The present invention relates to a bait reinforcing system developed primarily, though not exclusively, for reinforcing bait for use in fishing and related pursuits. However, the system can also be applied in other applications where bait is employed such as hunting,
10 trapping etc.

Background to the Invention

15 In both commercial and recreational fishing, bait disintegration can be a problem where the bait is subjected to successive hits, grabs or strikes, or where the bait is suspended in water for considerable periods of time.

20 In deep-sea fishing for large fish, such as billfish (including marlin), it is known to use "teasers" to attract the fish into the vicinity of a fishing vessel.. Artificial teasers only work if the fish visually sights the teasers and therefore natural teasers have been employed because of the fish-attracting aroma they release
25 in addition to appearance. Where natural teasers are used, again the problem of disintegration becomes an issue.

30 It is known to reinforce natural teasers, such as whole fish (eg. slimy mackerel), by wrapping or stitching the bait with thread. However, the preparation of each teaser is very time consuming, often taking from 10 to 30 minutes and, where multiple teasers must be used, this can involve significant preparation time and delays.

35 In non-water based applications of bait, such as with hunting or trapping, baits are often used to lure predators, which may be game or pests. Again, baits can disintegrate when left out in the environment for some

time, or when subjected to successive nibbling, biting or feeding by a predator. They may also disintegrate without, for example, the associated trap being activated.

5

Summary of the Invention

In a first aspect the present invention provides a bait reinforcing apparatus including:

- a deformable receptacle into which the bait can be placed such that the receptacle can deform around the bait and;
- a plurality of apertures defined in the receptacle such that, when the bait is placed therein, a predator can sense the bait via the apertures.

15 Advantageously, the apparatus of the present invention provides a receptacle which deforms around the exterior of the bait thus containing it, but also enabling it to be rapidly and easily reinforced. In addition, the employment of a plurality of apertures allows the
20 predators to sense the bait and optionally access it. Employment of a deformable receptacle also enables the apparatus to assume the shape of the bait. This is advantageous where the bait is a small animal, such as a small baitfish or rodent, as a predator can still
25 recognise the animal shape.

Preferably the receptacle is a sleeve into which the bait can be inserted. Employment of a sleeve is extremely convenient because of its ease of use. Preferably the sleeve is elongate, being closed at one end and having a
30 reinforced opening at the opposite end through which the bait can be introduced into the sleeve (via insertion at the opening). This arrangement provides for a rapid deployment of the bait.

Preferably the apertures are a plurality of holes
35 formed in the sleeve to define a generally perforated or grid-like formation around the bait in use. This maximises the exposure of the bait whilst still

reinforcing it, and enables its taste, aroma, shape and visual qualities to be preserved.

Preferably the sleeve closed end is adapted for providing a line attachment point thereto. Thus, the
5 reinforcing apparatus can be attached to a connecting line such as a fishing line, so that it may be reused. In land-based applications the apparatus can be connected to a safety line.

Optionally, hooks or other fastening mechanisms can be
10 associated with the apparatus so that it can function not only as an attractor, but also as a captive mechanism. Other attractor accessories can also be associated with the sleeve such as coloured nose cones, side flippers and fins, beaks, noses etc.

15 Typically, the sleeve-closed end also has an aerodynamic profile to enhance movement of the apparatus through a fluid such as water.

In an alternative arrangement, the receptacle can be a plurality of deformable rings in series, with each ring
20 connected to a next adjacent ring by one or more connecting members. Preferably in this regard the bait is inserted to extend through each of the rings in series, with preferably two connecting members maintaining the rings in spaced relation to each other and preventing, for
25 example, their displacement too far from each other, thereby maintaining the integrity of the reinforcing apparatus.

Typically the receptacle is formed from an elastomeric material having shape memory, such as a polymeric rubber.
30 In this regard, the material may also be impregnated with colourings and other attractor features such as reflective material fragments including metal fragments etc.

In a second aspect the present invention provides a method for forming a bait reinforcing apparatus where the
35 receptacle is a sleeve as defined in the first aspect, including the steps of:

- dipping a mandrel into molten material for the sleeve;

- removing the mandrel and allowing the sleeve to solidify around the mandrel;
- forming a plurality of apertures in the sleeve whilst on the mandrel or once removed therefrom.

5 Thus, the closed end of the sleeve can be defined at the free end of the mandrel and can be additionally formed to take appropriate shapes and receive attachments as described above.

10 The opposite open end of the sleeve can be formed around the mandrel, for example, by being folded or rolled over prior to complete solidification, to define a reinforcement around the open end, thus allowing for repeated insertion of baits thereinto without tearing of the sleeve.

15 Preferably the apertures are formed in the sleeve by pressing, punching or cutting.

20 In a third aspect the present invention provides a method for forming an apparatus as defined in the first aspect where the receptacle includes a plurality of deformable rings, including the steps of:

- arranging a sheet of deformable material on a substrate; and
 - forming in and then removing from the sheet a plurality of adjacent but non-overlapping rings, and
- 25 such that at least one connecting member extends between adjacent rings.

30 Advantageously in the third aspect the apparatus can be formed in a single pressing, punching or cutting motion, thus providing for rapid apparatus manufacture. Alternatively, the rings and connecting member(s) can be moulded.

35 Preferably two connecting members are defined to extend between adjacent rings, one being tangential to an upper part of each ring and the other being tangential to a lower part of each ring.

 In a fourth aspect, the present invention provides a bait reinforcing apparatus including a material having a

plurality of apertures therethrough that can be positioned to surround the bait in a close facing relationship in a manner that tends to preserve the structural integrity of the bait.

5 In the fourth aspect, the material can be the deformable receptacle as defined in the first, second and third aspects. However, the material can also be a metallic mesh material (eg. a perforated or apertured steel mesh) that is positionable in close facing
10 relationship to the bait. Alternatively, the material can be in the form of a tape (eg. an adhesive tape) having apertures therethrough and which can be wrapped around the bait in the close facing relationship.

15 **Brief Description of the Drawings**

Notwithstanding any other forms which may fall within the scope of the present invention, preferred forms of the invention will now be described, by way of example only,
20 with reference to the accompanying drawings in which:

Figure 1 shows a perspective view of a first bait reinforcing apparatus in accordance with the present invention;

Figure 2 shows a side elevation of an alternative
25 apparatus to that shown in Figure 1, with a bait inserted therein;

Figure 3 shows a similar view to Figure 1, but with a closed end of the apparatus being modified for line attachment and for water movement;

30 Figure 4 shows a similar view to Figure 2, but with a closed end of the apparatus being again modified for line attachment and for predator attraction;

Figure 5 shows an apparatus similar to that of Figure 2, but modified with an attractive element attached
35 thereto;

Figure 6 shows a plan elevation of an alternative bait reinforcing apparatus;

Figure 7 shows a side elevation of the apparatus of Figure 6 when fitted to a bait; and

Figure 8 shows a side elevation of a further alternative bait reinforcing apparatus.

5

Modes for Carrying out the Invention

Referring to Figure 1, a bait reinforcing apparatus is shown in the form of an elongate sock sleeve 10. The
10 sock sleeve has a closed end 12 and an opposite open end 14. A plurality of apertures in the form of holes 16 are defined in the sock sleeve as shown.

The open end is typically reinforced by a circumferential back-fold or roll 18 of the sleeve 10.
15 This allows for repeated insertion and removal of bait to and from the sleeve, without the sleeve deteriorating at that end (eg. by tearing). The closed end may also be reinforced, for example, by being of increased thickness (as defined during moulding) to prevent the bait from
20 being pushed out at that end during insertion, and optionally to allow for line and hook attachment etc.

Typically the sock sleeve is formed from an elastomeric material having shape memory, such as an elastomeric polymer (eg. a natural or synthetic rubber
25 such as latex, an ABS rubber etc). Thus, when a bait is inserted therein, the sleeve can expand and deform around the bait, thereby reinforcing and also providing structural integrity to the bait. The deformability of the sleeve also enables it to assume the general external
30 shape of the bait, and this can be advantageous in attracting a predator.

Typically the sock sleeve 10 is formed by dipping an elongate mandrel into an elastomeric liquid polymer or monomer solution, allowing a skin to form around the
35 mandrel, withdrawing the mandrel from the solution and allowing excess polymer to drip back into the solution. The polymer typically air cures on the external surface of

the mandrel, and thereafter the sleeve can be slipped off the mandrel. The holes 16 can be formed eg. by pressing, cutting or punching either whilst the sleeve is on the mandrel, or once it has been removed.

5 The open end of the sleeve is typically reinforced by folding or rolling that part of the sleeve at the open end circumferentially therearound to define a reinforcing section. This folding or rolling back is typically performed prior to complete curing of the end so that the
10 folded back section fastens to the underlying sleeve.

Typically in use in an expanded orientation, the holes 16 are dilated, thereby providing a greater access to the bait held therewithin. Thus, bait fragments, bait aroma and smell, and bait visualisation can be provided to
15 a predator (eg. to a larger fish such as a billfish). The apertures may also be of sufficient size for the predator to at least partially feed or nibble through the apertures thus attracting them to the bait.

Referring now to Figure 2, a second sock sleeve 20 is
20 shown with a bait such as a small fish F inserted therein. This sleeve is typically formed in a similar way to sock sleeve 10, but in this case the apertures are defined as diamond-shaped holes 22 through the sleeve, defining a grid-like formation of the sleeve around the fish. This
25 exposes a greater proportion of the fish. However, in some applications a stronger sleeve material may be required and/or the user may need to be more careful when inserting fish into this sleeve. As shown, a hook 24 and line 26 can extend through and/or be mounted at closed end
30 28 of sleeve 20. Thus the apparatus can also function as a snare or trap for the predator.

Figure 3 shows a similar view to Figure 1, but in this case the front (closed end) 30 of the sock sleeve is modified. In this embodiment the closed end is formed to
35 define a bill 31 through which holes 32,34 can be defined. The bill can have an aerodynamic profile to facilitate movement of the apparatus through water. That profile can

also be shaped to cause an oscillating movement when the apparatus is moved through water, similar to a small fish swimming.

5 The leading hole 32 can have a line 36 attached thereto (such as a fishing line). The trailing hole 34 can have a connecting line 38 inserted therethrough, eg. for connecting that sleeve to another (optionally identical) adjacent sleeve. In this way, a plurality of sleeves can be joined together, where for example multiple
10 teasers are required (such as with game and commercial fishing). A hook 39 can also or optionally be connected to hole 34 as shown.

15 Figure 4 shows a sleeve similar to Figure 2, but in this case the closed end 28 has a nose cone 40 formed thereat or adhesively fastened thereto. Again, the nose cone can have a hole 42 defined therethrough for connection to a line 44. The nose cone typically has a reflective outer surface, such as a coating with a reflective paint, or may even have a reflective material
20 (eg. metallic material) dispersed therethrough. Such arrangements function to visually attract predators.

25 Figure 5 shows a similar sleeve to Figure 2, but in this case the sleeve has an artificial fin 50 attached thereto, to simulate the fin of a small fish, thereby acting as an attractor to a predator. In this regard, multiple fins can be mounted to the sleeve. Also, the fins can be fabricated from or include reflective or luminescent material to further attract a predator fish.

30 The apparatus of Figures 1 to 5 can also be fabricated from a non-deformable material, such as a perforated or apertured metal (eg. a stainless steel mesh having corrosion resistance). The advantage of using apertured metallic material such as mesh is that the life of the apparatus is increased.

35 In accordance with the invention, the non-deformable material is sized and then positioned to be in a close-facing relationship with the bait (eg. a small fish,

rodent, piece of meat etc.) such that it preserves the structural integrity thereof while still acting as an attractor.

Referring now to Figures 6 and 7, an alternative embodiment of a bait reinforcing apparatus is depicted. In this embodiment, a plurality of rings 60 are formed from a deformable elastomeric material and are joined together by opposite parallel linking members 62. The rings can be stretched around a fish F as shown in Figure 7, and are held in place and prevented from spreading further apart by the linking members 62. At least one and typically two linking members are employed.

The embodiment of Figure 6 can be cut or pressed from a flat sheet of elastomeric material, and the rings then twisted into orientation when mounting the apparatus on a fish. Alternatively, the apparatus can be moulded (eg. in a die) using injection moulding etc.

Referring now to Figure 8, a further alternative bait-reinforcing apparatus is depicted. In this case, the apparatus is formed from an apertured tape 80, typically having an adhesive on one side thereof. Tape 80 has a plurality of apertures 82 therethrough. The tape can be deformable in the sense that it can be formed from a polymer having elastic deformation and shape memory. Alternatively, the tape can be relatively inflexible. In any case, the tape is positionable around the bait in a close facing relationship that enhances the structural integrity thereof.

The apparatus described above can readily be modified to accommodate different bait types, including other sea creatures (such as prawns and mussels), rodents such as rats and mice for land-base hunting and trapping, and even portions or slabs of raw meat etc. The reinforced bait can be used to attach a wide range of predators including fish, shark, feral animals such as wild dog, cat, pigs etc.; pests such as excessive kangaroo populations; bear etc.

A number of advantages follow on from the embodiments as described herein. These include:

- The apparatus helps keep a fish bait, or other baiting substance, in one piece during extended use.
- 5 • The apparatus significantly decreases the time required to reinforce a bait, such as a fish bait.
- A deformable apparatus can be easily and rapidly positioned on and removed from a bait to which it is attached, also making it available for reuse.
- 10 • The apparatus can be made from a transparent material such that its presence is more difficult to detect by a predator, or it may be made from or have dispersed therethrough a predator attractor material, such as a reflective or luminescent material.
- 15 • Various attachments can be formed on the apparatus, including bills, cones, fins, hooks etc.
- The apparatus can be used for fishing, hunting, trapping etc.
- The apparatus can be used in trawling, trolling, game
- 20 fishing, beach fishing, boat fishing, rock fishing etc.
- Various hooking systems can be incorporated into the apparatus.
- The apparatus can also prevent bait from coming off a hook.
- 25 • The apparatus can preserve the natural look and shape of the bait to which it is attached.
- When used on fish or other whole animal bait, the apparatus holds the skin intact, even where it is subjected to nibbling or biting.
- 30 • Natural secretions from the bait in the apparatus are released through the apertures, acting as a natural attractant for a predator.

Whilst the invention has been described with reference to a number of preferred embodiments, it should
35 be appreciated that the invention can be embodied in many other forms.

Claims

1. A bait reinforcing apparatus including:
 - a deformable receptacle into which the bait can be placed such that the receptacle can deform around the bait; and
 - a plurality of apertures defined in the receptacle such that, when the bait is placed therein, the predator can sense the bait via the apertures.
2. Apparatus as claim in claim 1 wherein the receptacle is a sleeve into which the bait can be inserted.
3. Apparatus as claimed in claim 2 wherein the sleeve is elongate, being closed at one end and having a reinforced opening at the opposite end through which the bait can be introduced into the sleeve.
4. Apparatus as claimed in claim 2 or claim 3 wherein the apertures are a plurality of holes formed in the sleeve to define a perforated or grid-like formation around the bait in use.
5. Apparatus as claimed in claim 3 wherein the sleeve closed end is adapted to provide a line attachment point thereto and optionally has an aerodynamic profile to enhance movement of the apparatus through a fluid such as water.
6. Apparatus as claimed in claim 1 wherein the receptacle is a plurality of deformable rings in series, with each ring connected to a next adjacent ring by one or more connecting members.
7. Apparatus as claimed in claim 6 wherein the bait is inserted to extend through each of the rings in series, with two connecting members maintaining the rings in spaced relation to each other.
8. Apparatus as claimed in any one of the preceding claims wherein the receptacle is formed from an elastomeric material having shape memory.
9. A bait reinforcing apparatus substantially as herein described with reference to the accompanying

drawings.

10. A method for forming an apparatus as defined in any one of claims 2 to 5 including the steps of:
 - dipping a mandrel into molten material for the sleeve;
 - removing the mandrel and allowing the sleeve to solidify around the mandrel;
 - forming a plurality of apertures in the sleeve, either whilst on the mandrel, or once removed therefrom.
11. A method as claimed in claim 10 wherein the apertures are formed in the sleeve by pressing, punching or cutting.
12. A method for forming an apparatus as defined in claims 6 or 7 including the steps of:
 - arranging a sheet of deformable material on a substrate;
 - forming in and then removing from the sheet a plurality of adjacent but non-overlapping rings, and such that at least one connecting member extends between adjacent rings.
13. A method as claimed in claim 12 wherein the apertures are formed by pressing, punching or cutting the sheet.
14. A method as claimed in claim 12 or 13 wherein two connecting members are defined to extend between adjacent rings, one being tangential to an upper part of each ring and the other being tangential to a lower part of each ring.
15. A method for forming a bait reinforcing apparatus substantially as herein described with reference to the accompanying drawings.
16. A bait reinforcing apparatus including a material having a plurality of apertures therethrough that can be positioned to surround the bait in a close-facing relationship in a manner that tends to preserve the structural integrity of the bait.

17. Apparatus as claimed in claim 16 wherein the material is the deformable receptacle as defined in any one of claims 1 to 9.
- 5 18. Apparatus as claimed in claim 16 wherein the material is a metallic mesh material such as a perforated or apertured steel mesh.
- 10 19. Apparatus as claimed in claim 16 wherein the material is a tape, optionally adhesive, having apertures therethrough and which can be wrapped around the bait in the close-facing relationship.

Dated this 22nd day of February 2002

DING-GOES PTY LTD

By its Patent Attorneys

GRIFFITH HACK

15

FIGURE 1

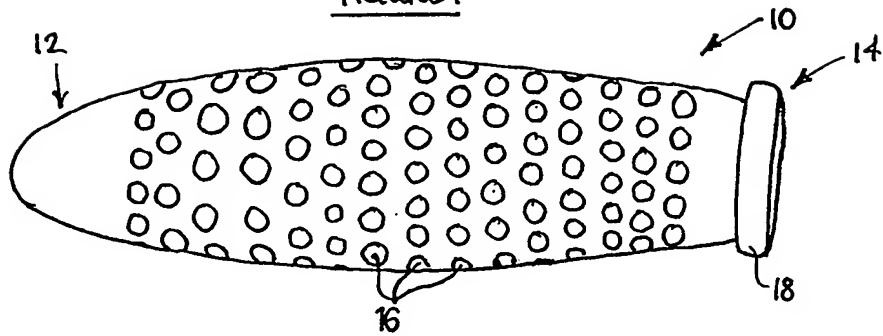


FIGURE 2

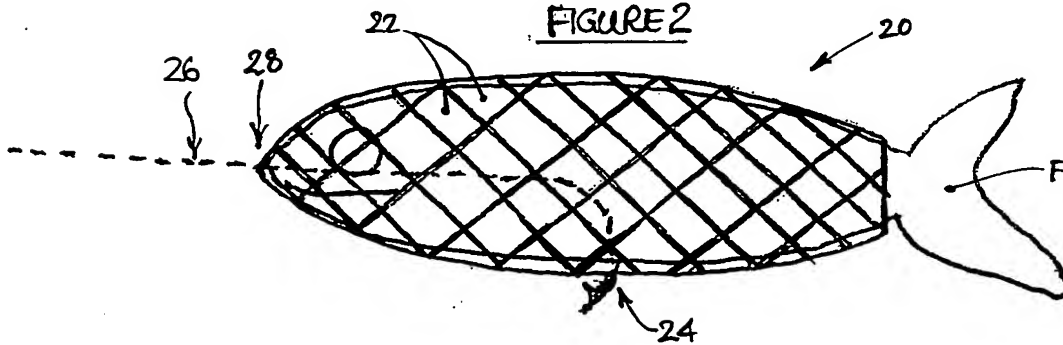


FIGURE 3

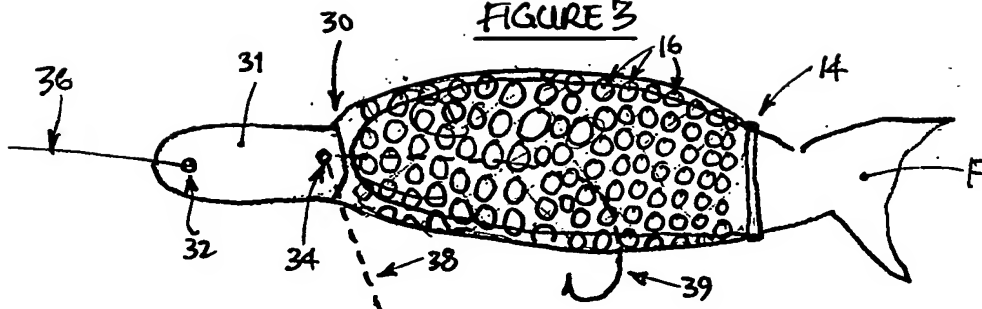


FIGURE 4

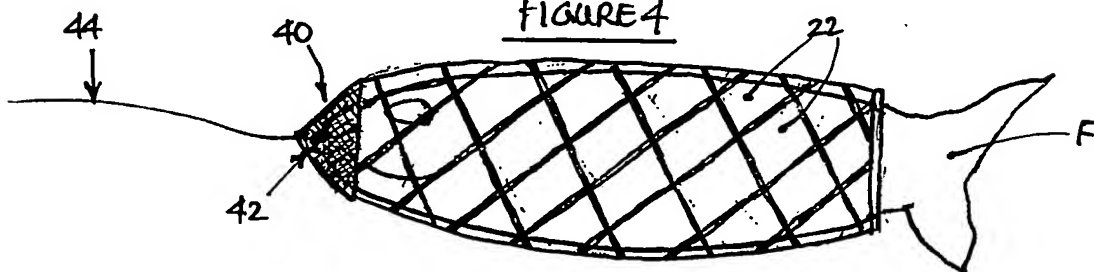


FIGURE 5

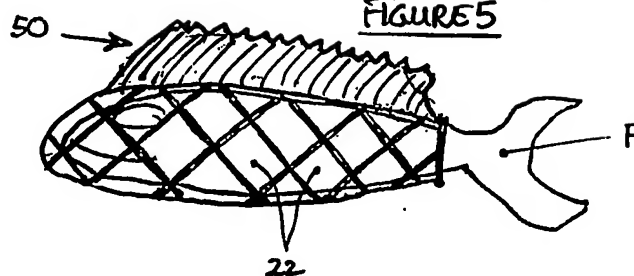


FIGURE 6

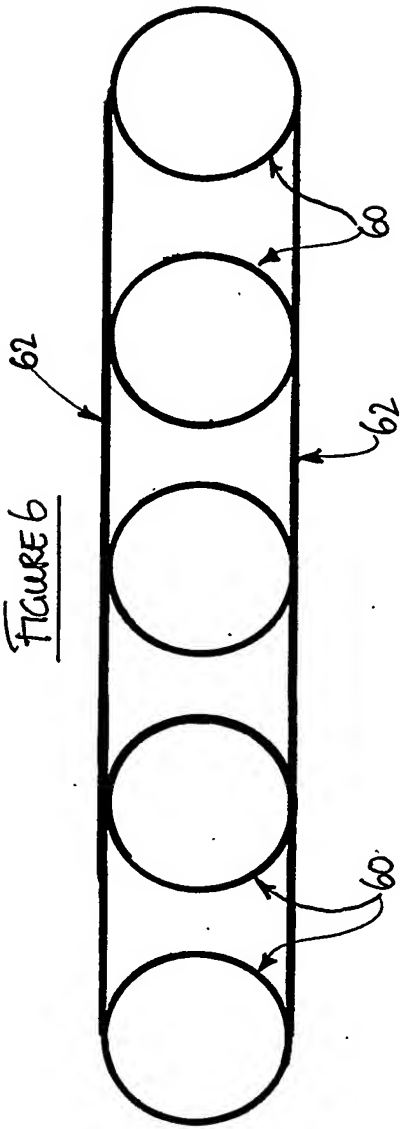
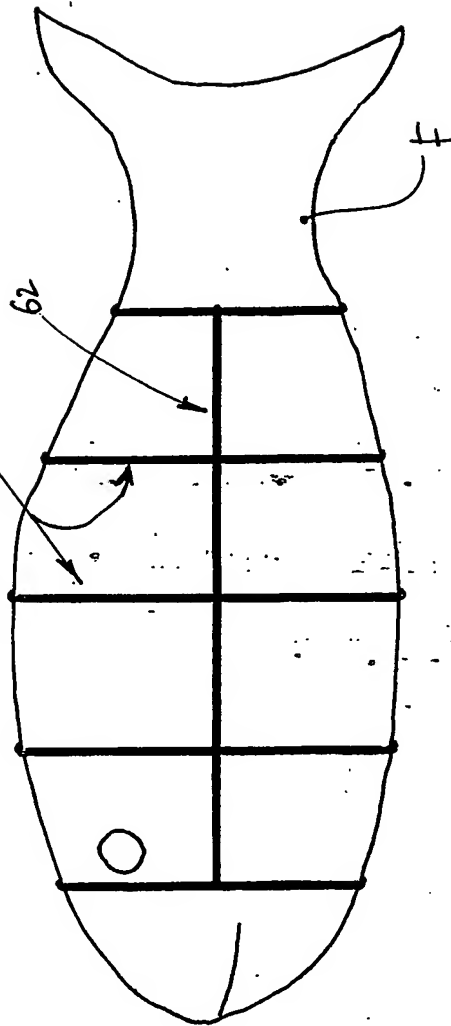
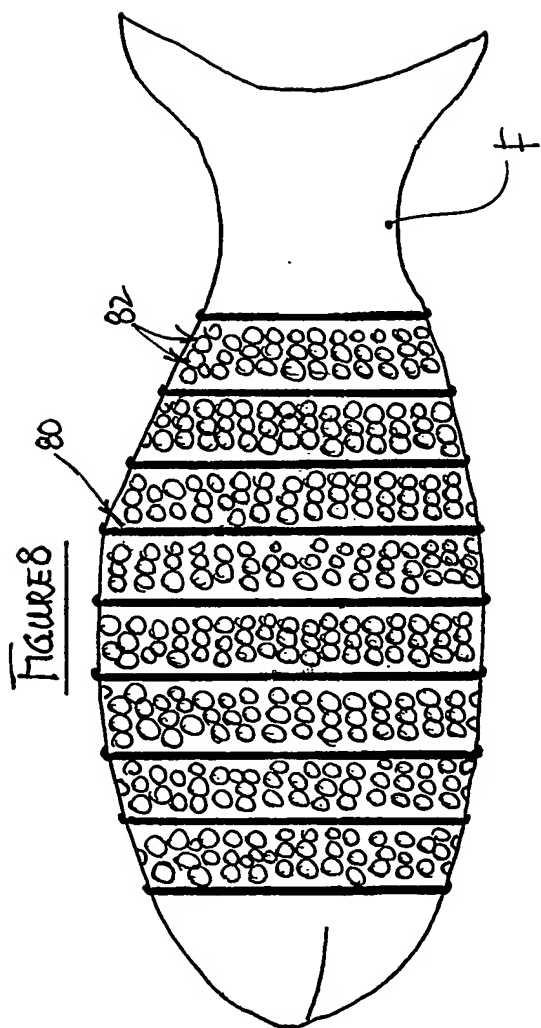


FIGURE 7





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